AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remain(s) under examination in the application is presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or fewer characters; and 2. added matter is shown by underlining.

1-29. (Cancelled).

30. (Currently Amended) A method of ~~material~~ processing material of an object by generating laser radiation delivered as [[with]] laser pulses having a large spectral bandwidth, ~~wherein~~ and irradiating the material with the laser pulses ~~impinge on or enter into an object to be processed and cause~~ to process the material by causing a processing effect that creates a physical or chemical change in the material ~~of the object to be processed~~, the method comprising:

determining a spectral dependency of the processing effect before or during the processing; and

altering the generated laser radiation before or during processing to achieve defined processing effects by selectively modifying one or more spectral parameters of the laser radiation according to the spectral dependency of the processing effect ~~pulses before or during the processing process to achieve defined processing specific effects~~.

31. (Currently Amended) The method of Claim 30, wherein one of the following [[the]] defined ~~processing specific~~ processing effects are evaluated when considering the spectral dependency ~~selected from the group consisting of~~:

an increase in processing speed, an improvement in material selectivity, an improvement in surface structuring, an achievement of an optical breakthrough, and any combination thereof.

32. (Currently Amended) The method of Claim 30, wherein the modified spectral parameter is a spectral distribution of amplitude [[of]] in the laser pulses.

33. (Currently Amended) The method of Claim 30, wherein the modified spectral parameter is a spectral distribution of phase [[of]] in the laser pulses.

34. (Currently Amended) The method of Claim 30, wherein the modified spectral parameter is a spectral distribution of polarization [[of]] in the laser pulses.

35. (Currently Amended) The method of Claim 30, further comprising measuring a quantity of the processing effect and dynamically modifying the at least one spectral parameter as a function of the measured quantity ~~a measurable quantity of the process~~.

36. (Withdrawn) The method of Claim 35, wherein a removal rate of material processing serves as the measurable quantity.

37. (Withdrawn) The method of Claim 35, wherein a surface roughness serves as the measurable quantity.

38. (Withdrawn) The method of Claim 35, further comprising using a transmission of the object to be processed as the measurable quantity producing or processing an optical wave guide.

39. (Withdrawn) The method of Claim 35, further comprising using a reflection of electromagnetic waves as the measurable quantity for producing or processing an optical wave guide.

40. (Withdrawn) The method of Claim 35, wherein a fraction of laser light reflected by a processing zone serves as the measurable quantity.

41. (Withdrawn) The method of Claim 35, further comprising providing a component having resonance frequencies and using at least one of the resonance frequencies as the measurable quantity for producing or processing a micro-mechanical component.

42. (Withdrawn) The method of Claim 35, wherein a resonance amplitude at a defined oscillation frequency serves as the measurable quantity for producing or processing a micro-mechanical component.

43. (Withdrawn) The method of Claim 35, further comprising evaluating a hydrohobicity or a hydrophilicity of a processing surface as the measurable quantity.

44. (Withdrawn) The method of Claim 35, further comprising evaluating an anisotropy of a processed material as the measurable quantity.

45. (Withdrawn) The method of Claim 35, further comprising using a material selectivity of an interaction with composite materials as the measurable quantity in the processing of composite materials.

46. (Withdrawn) The method of Claim 35, further comprising using at least one electrical property of said microelectronic component as the measurable quantity in processing a microelectronic component.

47. (Withdrawn) The method of Claim 46, further comprising selecting said electrical property from the group consisting of: conductivity and capacitance.

48. (Currently Amended) The method of Claim 35, wherein the material is human eye tissue and further comprising measuring [[using]] at least one plasma parameter as the measured quantity ~~measurable quantity in the treatment of human eye tissue~~.

49. (Previously Presented) The method of Claim 48, further comprising selecting the plasma parameter from the group consisting of: an energy threshold value for an optical breakthrough, a scattered light, a plasma spectrum, and any combinations thereof.

50. (Withdrawn) The method of Claim 35, wherein, in two-photon polymerization of photosensitive materials, the measurable quantities are selected from the group consisting of: a quantum efficiency of the polymerization process, optical properties of the polymerized materials, mechanical properties of the polymerized material, and any combinations thereof.

51. (Currently Amended) The method of Claim 30, ~~further comprising~~ wherein determining the spectral dependency comprises testing predefined ones of the spectral parameters of the laser pulses for their processing effect ~~on an intended processing operation and setting~~ and selecting values for the tested spectral parameters as start values for the material processing ~~selected with regard to an intended processing effect as starting parameters for the material processing process~~.

52. (Currently Amended) The method of Claim 30~~, further comprising setting~~ wherein determining the spectral dependency comprises selecting values for the spectral parameters ~~of the laser pulses known from experiences or calculations~~ from test results or pre-stored data as start values for the processing ~~as starting parameters for the processing process~~.

53. (Currently Amended) An apparatus for processing material of an object to be processed ~~carrying out the method as claimed in Claim 30~~, comprising:

a laser for generating laser radiation delivered as pulses having a large spectral bandwidth;

a processing unit connected to the ~~user~~ the laser to irradiate the material with the laser pulses for laser pulse processing; ~~of an object to be processed, wherein~~

~~the laser is~~ a pulse shaper operably connected [[to]] between the laser and the processing unit with [[a]] the pulse shaper ~~for setting or~~ altering the generated laser radiation before or during the processing by modifying at least one of [[an]] a spectral distribution of amplitude in the laser pulses, a spectral distribution of phase in the laser pulses, or a spectral distribution of polarization [[of]] in the laser pulses;

a control unit being operably connected to the pulse shaper and being adapted to control the pulse shaper to carry out the method as claimed in claim 30.

54. (Previously Presented) The apparatus of Claim 53, further comprising at least one amplification stage arranged preceding or following the pulse shaper for amplification of the laser pulses.

55. (Currently Amended) The apparatus of Claim 53, further comprising a measurement unit for monitoring the processing process, the measurement unit being operably connected to ~~the pulse shaper with a~~ the control unit operably connected to the pulse shaper.

56. (Currently Amended) The apparatus of Claim 55, wherein the measurement unit comprises at least one optical material property measurement unit for measuring the optical ~~material~~ properties of the material.

57. (Currently Amended) The apparatus of claim 55, wherein the optical ~~material~~ properties of the material are selected from [[the]] a group consisting of: a scattering, a refractive index spectrum, or a plasma emission spectrum, and any combinations thereof.

58. (Withdrawn) The apparatus of Claim 55, wherein the measurement unit comprises at least one sensor for measurement of the temperature of material processing.

59. (Withdrawn) The apparatus of Claim 55, wherein the measurement unit comprises at least one sensor for measurement of a surface roughness of an object to be processed.

60. (Previously Presented) The apparatus of Claim 55, wherein the measurement unit comprises at least one optical sensor.

61. (Currently Amended) The apparatus of Claim 53, wherein the apparatus is ~~suitable for processing~~ a human eye tissue processing apparatus.

62. (Currently Amended) The apparatus of Claim 53, ~~further comprising~~ wherein the pulse shaper comprises a spectral phase modulator ~~based on the use of~~ employing a microelectromechanical system (MEMS).

63. (New) A method for processing material of an object by generating laser radiation delivered as laser pulses having a large spectral bandwidth and irradiating the material with the laser pulses to process the material by causing a processing effect involving a physical or chemical change in the material, the method comprising:

considering a spectral dependency of the processing effect before or during the processing; and

altering the generated laser radiation before or during the processing to optimize the processing effect by selectively modifying, according to the spectral dependency of the processing effect, the spectral composition of at last one of the following parameters of the laser radiation: spectral distribution of amplitude in the laser pulses, spectral distribution of phase in the laser pulses, and spectral distribution of polarization in the laser pulses.

64. (New) The method of Claim 63, wherein the laser pulses are altered by spatially separating spectral components of the laser radiation, modifying different spectral components differently and collimating the spectral components back into a pulsed laser beam, wherein the modification of the different spectral components reflects to the spectral dependency of the processing effect.

65 (New) The apparatus of Claim 53, wherein the pulse shaper spatially separates spectral components of the laser radiation, modifies different spectral components differently and collimates the spectral components back into a pulsed laser beam, wherein the control unit controls the modification of the different spectral components.

66. (New) The method of Claim 30, wherein the laser pulses are altered by spatially separating spectral components of the laser radiation, modifying different spectral components differently and collimating the spectral components back into a pulsed laser beam, wherein the modification of the different spectral components reflects to the spectral dependency of the processing effect.